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<b>TRANSMITTAL FORM</b>  (to be used for all correspondence after initial filing)	Application Number	10/694,202	
	Filing Date	10/27/2003	
	First Named Inventor	MARLOW JORDANL	
	Art Unit	2859	
	Examiner Name	VERBITSKY	
Total Number of Pages in This Submission	8	Attorney Docket Number	

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## SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	NEAL O. WILLMANN		
Signature	<i>Neal O. Willmann</i>		
Printed name	NEAL O. WILLMANN		
Date	12-19-2004	Reg. No.	28,132

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December 18, 2004

Applicant Marlow C. Jordahl  
Application No. 10/694,202  
Filed Oct. 27, 2003  
Title Method and Device...

Art Unit 2859  
Examiner Verbitsky

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In response to the Office Action of Sept. 23, 2004, please consider the following:

### Restriction Requirement:

Claims 1-14 were originally filed in this application. The Examiner has identified two separate and distinct inventions in the claims as filed: Invention I includes claims 1-9, Invention II includes claims 10-14. Applicant has elected to prosecute the Invention of Group II, i.e., claims 10-14.

### Claims Rejection:

Claims 10 and 12-14 have been rejected as obvious over Hutchinson (U.S. 6,393,212) in view of Moskal (U.S. 5,615,953).

In its simplest embodiment, the claimed device consists of a tube containing a heat source, a heat sensing/detecting means and a signal means indicating an increase in temperature within the tube.

When utilized, the claimed device is placed in a liquid system, e.g., a boiler, and the internal heating means within the device establishes a base line temperature within the tube/sheath/collector. As the liquid system "ages", or operates, typically, over a period of months, conditions within the liquid system change. In almost all instances, those changed conditions (lime/calcium scale build-up) will cause the temperature of the liquid system, (typically, the temperature of the water in the boiler) to decrease, thus diminishing the efficiency of the boiler. Because the claimed device is placed within the liquid system, scale will build on the exterior of the tube/sheath/collector of the device. This build up will act as an insulator, trapping heat from the internal heating means and not allowing it to escape from the device. As the scale continues to accumulate, and to become thicker on the exterior of Applicant's device, the trapped heat will cause an increasingly higher temperature within the tube/sheath/collector of the device, and that higher temperature will be detected by the internal heat sensor/detector, which will, in turn, generate a generally recognized signal indicating the altered condition and need for an appropriate response.

The Examiner has observed that the Hutchinson reference discloses a fluid steam generating system having a boiler with a heater, a temperature sensor and a flow sensor to control the water temperature in the boiler. In claim 9 of the Hutchinson reference, it is implied that microboiling at the surface of the heater will cause a build-up of calcium on the heater surface. Calcium accumulation in the form of scale is a recognized problem in boilers, dishwashers and all other heated liquid systems, and, of course, Applicant has no quarrel with the Hutchinson observation: A heated liquid system typically deposits calcium on the components of the system over time.

The Examiner has observed that the Moskal reference discloses that the temperature profile of tube banks of a boiler is indicative of deposit accumulation on the tube, and that, therefore, it would have been obvious to modify the boiler device of Hutchinson so as to measure the temperature profile of the tubes of Moskal, so as to determine if there is a temperature related accumulation on the tubes so as to minimize the accumulation, in order to protect the device (boiler/liquid system) from damage.

Applicant's initial response to the Examiner's observation is that the device of Moskal might be beneficial to the boiler system of Hutchinson; but because Applicant's device is totally different from the Moskal device, the combined teachings of Moskal and Hutchinson are of no consequence to the patentability of Applicant's device. And, furthermore, there is no teaching in Hutchinson that, when combined with the teaching in Moskal, would suggest or obviate the claimed device.

The Moskal device is a lance that is placed in a boiler (Moskal refers to the boiler as "boiler tubes") near, but not touching, the heated surfaces of the boiler. The lance contains an array of infrared sensors to measure the radiant energy emitted from the heated boiler surface. The radiant energy emitted (emissivity) from the heated surface will change as the heated surface accumulates deposits of scale, which is a natural occurrence in heated liquid systems. The infrared sensors in the lance will, allegedly, detect a change in emissivity from the heated surface as scale accumulation progresses, and this detected change allegedly can be processed by computer to determine the thickness of the accumulated scale on the heated surface of the boiler (tube banks). The lance is then utilized to remove, or reduce the built-up scale on the tube banks.

Applicant's device is completely different from Moskal's scale measurement and removal device. The Moskal device senses radiant energy (emissivity) from a heated boiler surface, detects a change in emissivity and calculates the scale accumulation allegedly responsible for that change. Scale generally accumulates faster on a heated surface. That is why Moskal directs his infrared sensors at the heat source (tube banks) of the boiler,

Applicant's device measures the change (typically an increase) in temperature within the device resulting from scale accumulation on the tube/sheath/collector of the device. The heat sensor in Applicant's device measures conducted heat within the device, not radiant heat on the side of the boiler's heated surfaces, as per the teaching of Moskal. For the Moskal device to measure scale accumulation, the device must be positioned at or near the heated surface to detect the radiant energy emissions from the surface. Applicant's device can be situated anywhere in a liquid system. The heating means within Applicant's device encourages scale build-up on its own surface, and thereby replicates the accumulation of scale throughout the system. Applicant's device then detects any increase in temperature within the device that will occur as a result of the accumulation of scale on itself and then the device signals to initiate preventative maintenance and/or remedial action on all the scale-sensitive components of the system.

Applicant's device detects accumulated scale on itself and then assumes similar scaling throughout the system. The Moskal device detects scale on the surface of the heat radiating surfaces of the system and then takes measures to physically remove it. Applicant's device is self-contained and physically unobtrusive. It can be positioned anywhere in the liquid medium of a system. The Moskal device is a major piece of

equipment and is feasible only in a boiler situation. Most liquid medium systems simply could not accommodate the Moskal device. So, not only are the components of Applicant's device different from those of the Moskal device, but the mode of operation and use are also clearly distinct. And, nothing in Hutchinson adds anything to the teaching of Moskal that suggests or obviates the patentability of Applicant's device.

#### With Regard to Claim 11

Claim 11 has been rejected as obvious over Hutchinson and Moskal, and further in view of Witt et al. (U.S. 6,428,627).

Applicant's claim 11 is drawn to the device of claim 10, but where the liquid system is a dishwasher.

More specifically, the Examiner is of the opinion that Hutchinson and Moskal disclose the claimed device as alleged, *supra*, and that Witt et al. state that a heater tube to a dishwasher is susceptible to mineral build-up, which could cause the failure of the heating element. Therefore, the Examiner opines that it would have been obvious to modify the device disclosed by the combination of Hutchinson and Moskal so as to measure the temperature profile of the flow heater tube described by Witt et al. to determine if there is a temperature related accumulation because dishwashers are susceptible to build-up, which can cause heater failure.

For the reasons stated above, the combined teachings of Hutchinson and Moskal neither describe nor suggest the elements of the self-contained device disclosed and claimed by Applicant. And, the fact that Witt et al. observe in their "Background of the Invention" that "a submerged heating element has the disadvantage that lime and other mineral build-up is caused [sic.] on the heating element[.]", and "that there is a

need....for a heater that uses a heating element that is not submerged in the solution[.]” does nothing to obviate Applicant’s claim 11, which is to the detection device, according to claim 10, in a specific system, i.e., a dishwasher.

The Witt et al. reference utilizes a tubular heater wound around the outside of a water line to a dishwasher. This placement of the heater eliminates scale build-up on the heater because the heater is not submerged in the solution. It is external to the dishwasher.

The Witt et al. reference has nothing to do with the need to detect an altered state (e.g. the accumulation of scale) to prompt preventative measures. Witt et al.’s solution to the problem of scale accumulation is to simply externalize the heating element.

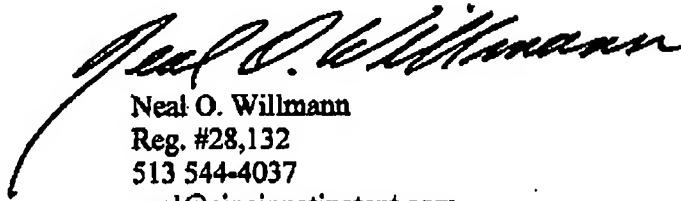
In view of the foregoing, Applicant respectfully submits that claims 10 and 12-14 are patentable, and that they are not obvious in view of the teachings of Hutchinson and Moskal. Hutchinson describes only a steam generator and makes only a gratuitous reference in claim 9 that in a fluid steam generating system there is an issue with calcium build-up on the heater surface. Moskal describes a device using infrared sensors to detect radiant energy from the heat source of a liquid system, the device then calculates the extent of scale build-up on the boiler tubes, and ultimately takes measures to remove it.

Adding the teaching of Witt et al. to the teachings of Hutchinson and Moskal also does nothing to obviate or diminish the patentability of Applicant’s device in a dishwasher system. Applicant’s device appears to be patentable regardless of the system.

Applicant hereby requests that the Examiner reconsider her rejection of claims 10-14 for, inter alia, the reasons set forth above. If the Examiner has any continuing

concerns, Applicant's attorney is available by phone fax or e-mail to address those concerns and expedite the allowance of the pending claims.

Respectfully submitted,



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